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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,805	10/29/2003	Rong-Chang Liang	07783.0082.NPUS00	1310

7590 11/19/2004  
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EXAMINER
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HASAN, MOHAMMED A

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/696,805

Applicant(s)

LIANG ET AL.

Examiner

Mohammed Hasan

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 - 46 is/are allowed.
- 6) ☒ Claim(s) 1 - 29, 34 is/are rejected.
- 7) ☒ Claim(s) 30 - 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/30/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Oath/Declaration***

1. Oath and declaration filed on 4/5/2004 is accepted.

### ***Information Disclosure Statement***

2. The prior art documents submitted by applicant in the Information Disclosure Statement filed on 7/30/2004 have all been considered and made of record (note the attached copy of form PTO – 1449). The U.S. patent application 09/784,972, and 09/874391 corresponding U.S. Publication No.2002/0182544, 2002/0188053, have been considered and cited on Form – 892).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1- 29, and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Liang et al (6,788,452 B2).

Regarding claim 1, Liang et al discloses (refer to figure 1) an electrophoretic display which comprises more than one layer of display cells (12) filled with electrophoretic fluids (column 6, lines 5 – 10).

Regarding claim 2, Liang et al discloses, wherein filled display cells are sealed with a polymeric sealing layer (13) (column 6, line 13, column 2, lines 37 – 41).

Regarding claim 3, Liang et al discloses (refer to figure 1) wherein the display cells are separated by partition walls (16) (column 6, lines 11 – 15).

Regarding claim 4, Liang et al discloses (refer to figure 1) wherein polymeric sealing layer (13) encloses the electrophoretic fluid within each cell and sealingly adheres to the surface of the partition walls of the cells (column 6, lines 5 – 13, column 2, lines 37 – 41).

Regarding claim 5, Liang et al discloses, wherein cells are partially filled (as shown in figure 3A).

Regarding claim 6, Liang et al discloses (refer to figure 1) wherein polymeric sealing layer (13) is contact with the top surface of the electrophoretic fluid (column 6, lines 5 – 13).

Regarding claim 7, Liang et al discloses, wherein the display cells are the partition type display cells (column 6, line 15).

Regarding claim 8, Liang et al discloses, wherein display cells are the microgroove or microchannel type display cells (column 1, lines 54 – 67).

Regarding claim 9, Liang et al discloses, wherein the display cells are microcapsules having a cell size ranging from about 10 to about 200 $\mu$ m (column 7, lines 55 – 62).

Regarding claim 10, Liang et al discloses, wherein the display cells are microcapsules having a cell size ranging from about 30 to about 120 $\mu$ m (column 7, lines 55 – 62).

Regarding claim 11, Liang et al discloses (refer to figure 4a and 4b), wherein the more than one layer of display cells are sandwiched between two conductor films (44 and 45) and then shortest distance between the two conductor films is in the range of about 15 to about 200 $\mu$ m (column 7, lines 8 – 20, column 7, lines 55 – 62).

Regarding claim 12, Liang et al discloses, wherein the more than one layer of display cells are sandwiched between two conductors films (44 and 45) and the shortest distance between the two conductor films is in the range of about 20 to about 50 $\mu$ m (column 7, lines 8 – 20, column 7, lines 55 – 62).

Regarding claim 13, Liang et al discloses, wherein each layer of display cells has a thickness in the range of about 10 to about 100 $\mu$ m (column 7, lines 55 – 62).

Regarding claim 14, Liang et al discloses, wherein each layer of display cells has a thickness in the range of about 12 to 30 $\mu$ m (column 7, lines 55 – 62).

Regarding claim 15, Liang et al discloses, wherein the display cells are filled with electrophoretic fluids of different colors, optical densities, switching speeds or magnetic properties (column 2, lines 32 – 37).

Regarding claim 16, Liang et al discloses, wherein one of layers comprises display cells having shape, dimension or ratio of opening to total area different from those of display cells of another layer (column 2, lines 32 – 37).

Regarding claim 17, Liang et al discloses (refer to figure 1) wherein the cells are separated by inactive partition (16) areas and sealing enclosed by a polymeric sealing layer (13) (column 6, lines 5 – 10).

Regarding claim 18, Liang et al discloses (refer to figure 6a) wherein inactive partition areas (66) of a layer are positioned with registration to active cells area of another layer in a staggered fashion (column 11, lines 20 - 31).

Regarding claim 19, Liang et al discloses (regarding claim 2a and 2b) which comprises one top layer (21) of display cells and one bottom layer (22) of display cells (column 6, lines 36 – 39).

Regarding claim 20, Liang et al discloses, the display cells are filled with an electrophoretic fluid comprising white pigment particles (column 4, line 39).

Regarding claim 21, Liang et al discloses, a display cells which are filled with an electrophoretic fluid white pigment particles or pigment – containing microparticles dispersed in a black solvent or solvent mixture (column 4, lines 47 – 59).

Regarding claim 22, Liang et al discloses, a multicolor (i.e., D max state) electrophoretic display wherein the bottom layer on the non-viewing side comprises black cells are filled with an electrophoretic fluid comprising whit pigment particles or pigment – containing microparticles dispersed a black solvent or solvent mixture (column 4, lines 47 – 59).

Regarding claim 23, Liang et al discloses, a full color or multi-color electrophoretic display wherein the bottom layer on the non-viewing side comprises red, green, blue and black cells which are filled with electrophoretic fluids comprising white pigment particles or pigment- containing microparticles dispersed in red , green, blue and black solvent or solvent mixture, respectively and the top layers comprises red, green and blue cells which are filled with electrophoretic fluids comprising white pigment particles or pigment –containing microparticles dispersed in red, green and blue solvent or solvent mixture (column 7, lines 25 – 38).

Regarding claim 24, Liang et al discloses (refer to figure 6a) wherein the colored cells (61 and 62) and inactive partition areas (66) of the two layers are arranged in a staggered fashion that the red, green, blue and black cells of the bottom layer respectively (column 11, lines 20 – 31).

Regarding claim 25, Liang et al discloses (refer to figure 4a and 4b) an electromagnetophoretic display which comprises one top layer (41) of display cells and one bottom layer (42) comprising display cells which are filled with an electromagnetophoretic fluid comprising a mixture of black magnetic particles and white non-magnetic particles dispersed in a colorless clear solvent or solvent (column 7, lines 8 – 31).

Regarding claim 26, Liang et al discloses, wherein the top layer comprises red, green and blue cells which are filled with electrophoretic fluids comprising white particles dispersed in red, green and blue solvents respectively (column 7, lines 31 – 34).

Regarding claim 27, Liang et al discloses, wherein the top layer comprises display cells which are filled with an electrophoretic fluid a mixture of white and black particles dispersed in a colorless clear solvent or solvent mixture (column 7, lines 35 – 38).

Regarding claim 28, Liang et al discloses (refer to figures 6a) a process for the manufacture of an electrophoretic display of more than one layer (61 and 62) of display cells , which process comprises (a) preparing separately two layers of display cells , each having a conductor film side (64) and a sealing side (63) ; and (b) laminating one of the layers over other optionally with an adhesive layer (column 11, lines 20 – 31).

Regarding claim 29, Liang et al discloses (refer to figure 6a) wherein step (a) is carried out by forming display cells (61) over a conductor film (64) , filling cells with an electrophoretic fluid and sealing are filled cells with a polymeric sealing layer (63) (column 11, lines 20 – 31).

Regarding claim 34, Liang et al discloses (refer to figure 6b) wherein step (b) is carried out by laminating one layer (62) of the display cells over layer with the sealing sides of the two layers facing each other (column 11, lines 32 – 42).

***Allowable Subject Matter***

4. Claims 35 – 46 are allowed.
5. The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in a combination fails to anticipate or fairly suggest the



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limitations of the independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claim 35, for example which include a process for the preparation of an electrophoretic display of more than one layer of display cells and process comprises (a) forming a first layer and first layer having a conductor film side and sealing side (b) forming a second layer of display cells on a transfer release layer (c) laminating a second layer over the first layer and removing the transfer release layer (d) optionally forming separately additional layers of display cells on transfer release layers and each layer having a transfer release layer side and a sealing side (e) laminating each of additionally layers over a stack of layers already formed and removing the transfer release layer (f) laminating a second conductor film over a stack .

6. Claims 30 – 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show where the cells are prepared by microembossing, cells are prepared by photolithography or prepunched holes, and two layers are prepared by different methods.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Liang et al (2003/0179437 A1) discloses, an electrophoretic display and novel process for its manufacture.

Liang et al (6,788,449 B2) discloses an electrophoretic display comprising cells of well- defined shape, size and aspect or ration which cells are filled with charged pigment particles dispersed in a solvent and novel processes for its manufacture.


### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH  
November 9, 2004

  
Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800